Complete Summary

GUIDELINE TITLE

Evidence based clinical practice guideline for children with acute bacterial sinusitis in children 1 to 18 years of age.

BIBLIOGRAPHIC SOURCE(S)

Cincinnati Children's Hospital Medical Center. Evidence based clinical practice guideline for children with acute bacterial sinusitis in children 1 to 18 years of age. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2001 Apr 27. 17 p. [234 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Acute bacterial sinusitis

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Treatment

CLINICAL SPECIALTY

Emergency Medicine
Family Practice
Infectious Diseases
Ophthalmology

Otolaryngology
Pediatrics

INTENDED USERS

Advanced Practice Nurses
Nurses
Pharmacists
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To assist the clinician in the appropriate management of pediatric acute bacterial sinusitis

TARGET POPULATION

Children 1 to 18 years of age with suspected acute bacterial sinusitis

These guidelines do not address all considerations needed to manage the following:

- Children under 1 year of age
- Children with chronic sinusitis
- Children with identified or suspected peri-orbital, orbital or intra-cranial abscess
- Children with cystic fibrosis
- Children with underlying anatomic paranasal abnormalities
- Children with ciliary dyskinesia
- Children with immune deficiencies

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnostic assessments

1. Assessment of signs and symptoms (Note: assessment of quantity, quality, and color of nasal discharge is considered but not recommended.)
2. Transillumination
3. Radiologic studies (computed tomography [CT] and magnetic resonance imaging [MRI])
4. Laboratory assessment (Note: routine laboratory assessments such as complete blood count are considered but not recommended.)
5. Sinus aspiration and bacterial culture (Note: Not recommended for use in the initial evaluation and management of the child with uncomplicated acute bacterial sinusitis.)

Management

1. Antibiotic treatment
    a. Amoxicillin

   b. Augmentin (amoxicillin-clavulanate)
   c. Cefuroxime (Ceftin)
   d. Cefpodoxime (Vantin)
   e. Cefprozil (Cefzil)
   f. Cefdinir (Omnicef)
   g. Clindamycin
   h. Cefixime (Suprax)
   i. Macrolides, such as clarithromycin (Biaxin) or erythromycin (EES)
   j. Azilides, such as azithromycin (Zithromax)
   k. Trimethoprim-sulfamethoxazole (TMP/SMX, Bactrim)
2. Symptomatic treatment of cough or congestion (considered but not recommended)
3. Referral to an otolaryngologist and/or ophthalmologist
4. Parental education

MAJOR OUTCOMES CONSIDERED

- Sensitivity and specificity of diagnostic modalities
- Signs and symptoms of acute bacterial sinusitis
- Antibiotic resistance

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Evidence Based Grading Scale:

A: Randomized controlled trial: large sample

B: Randomized controlled trial: small sample

C: Prospective trial or large case series

D: Retrospective analysis

E: Expert opinion or consensus

F: Basic laboratory research

S: Review article

M: Meta-analysis

Q: Decision analysis

L: Legal requirement

O: Other evidence

X: No evidence

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

These recommendations were formulated by a working group including community and hospital based physicians, nurses, and pharmacists, who examined current local clinical practices and performed extensive and critical literature reviews using the evidence-based grading scale defined above and in the "Major Recommendations" field.

During formulation of the guidelines, the committee members remained cognizant of controversies and disagreements over the management of patients with acute sinusitis. They tried to resolve controversial issues where possible and, when not possible, to offer optional approaches to care in the form of information that includes best supporting evidence of efficacy for alternative choices.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The recommendations contained in this document were formulated by a working group that included community and hospital based physicians, nurses, respiratory therapists, and others, who examined current local clinical practices and performed extensive and critical literature reviews.

During formulation of these guidelines, the committee members have remained cognizant of controversies and disagreements over the management of these patients. They have tried to resolve controversial issues where possible and, when not possible, to offer optional approaches to care in the form of information that includes best supporting evidence of efficacy for alternative choices.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The guidelines have been reviewed and approved by senior management, Legal Services, the Institutional Review Board, and other hospital committees and individuals.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The levels of evidence (A-F, S, M, Q, L, O, and X) are defined at the end of the "Major Recommendations" field.

Clinical Assessment

1. No single symptom or sign is specific for the diagnosis of acute bacterial sinusitis. The diagnosis is best made clinically in the presence of a constellation of signs and symptoms of at least 10 days duration without improvement (Wald et al., 1981 [B]; Wald et al., 1984 [B]; Wald, Guerra, & Byers, 1991 [C]; Aitken & Taylor, 1998 [C]; Garbutt, Gellman, & Littenberg, 1999 [C]). The 10-day duration is suggested because it has been shown that in most children with uncomplicated upper respiratory infection improvement is seen on average, by 10 days (Wald et al., 1981 [B]; Wald et al., 1984 [B]; Wald, Guerra, & Byers, 1991 [C]). On the other hand acute severe bacterial sinusitis represents a more toxic form and may have a shorter duration of symptoms (Wald, 1994 [S]; Fireman, 1992 [S]; Giebink, 1994 [S]).
2. The quantity, quality, and color of nasal discharge are not helpful in differentiating acute bacterial sinusitis from other upper respiratory illnesses (e.g., common cold, allergic rhinitis). It is therefore recommended that the character of the nasal discharge not be used to make a diagnosis or as an indication for antibiotic treatment (McLean, 1970 [D]; Aitken & Taylor, 1998

[C]; Gungor & Corey, 1997 [S]; Wald et al., 1981 [B]; Wald, Guerra, & Byers, 1991 [C]; Wald, 1994 [S]).

- Note 1: Physical exam is likely to reveal purulent nasal discharge and/or posterior oropharyngeal drainage. These findings however, are non-specific and of little diagnostic usefulness (Ott et al., 1991 [S]; Fireman, 1992 [S]; Wald et al., 1981 [B]; McLean, 1970 [D]; Kogutt & Swischuk, 1973 [D]; Williams & Simel, 1993 [S]).
- Note 2: Transillumination may be useful above the age of 10 in the hands of an experienced clinician (Wald, 1994 [S]), but may be of limited value in the younger, uncooperative child (Brook et al., 2000 [E]; Ott et al., 1991 [S]; Wald, Chiponis, & Ledesma-Medina, 1986 [B]; McLean, 1970 [D]; Otten & Grote, 1989 [C]).

Acute bacterial sinusitis is characterized by:

- Persistence of upper respiratory symptoms for greater than 10 days without improvement (Wald et al., 1981 [B]; Wald et al., 1984 [B]; Wald, Chiponis, & Ledesma-Medina, 1986 [B]; Isaacson, 1996 [S]; Brook et al., 2000 [E]; Wald, 1994 [S]).
- Nasal congestion and nasal discharge of any quality (i.e., may be either thin and milky or thick and purulent) (McLean, 1970 [D]; Aitken & Taylor, 1998 [C]; Dowell, Schwartz, & Phillips, 1998 [E]; Gungor & Corey, 1997 [S]; Wald et al., 1981 [B]; Wald, 1994 [S]; Ott et al, 1991 [S]; Fireman, 1992 [S]; Kogutt & Swischuk, 1973 [D]; Williams & Simel, 1993 [S]).
- Persistent cough which is often more severe at night (Wald et al., 1984 [B]).

  Note 1: Less-common complaints may include low-grade fever (McLean, 1970 [D]; Aitken & Taylor, 1998 [C]), sore throat or ear discomfort (Brook et al., 2000 [E]; Zacharisen & Kelly, 1998 [S]; Lusk & Stankiewicz, 1997 [S]), fatigue, malodorous breath, intermittent periorbital edema or facial swelling, and facial or tooth pain (Zacharisen & Kelly, 1998 [S]; Wald, 1994 [S]; Isaacson, 1996 [S]).

Acute severe bacterial sinusitis may present with the same symptoms described above but is differentiated from acute bacterial sinusitis by the following:

- Toxic appearing child (Wald, 1994 [S]; Fireman, 1992 [S]; Giebink, 1994 [S]).
- Fever higher than 102.2 degrees Fahrenheit (Wald, 1994 [S]; Fireman, 1992 [S]; Giebink, 1994 [S]).
- Duration of symptom observation may be <10 days (Wald, 1994 [S]; Fireman, 1992 [S]; Giebink, 1994 [S]).

Other conditions that present with symptoms similar to acute bacterial sinusitis include recurrent viral upper respiratory infection, allergic rhinitis, cough-variant asthma, enlarged adenoids, deviated nasal septum, choanal atresia, nasal foreign body, neoplasm (Zacharisen & Kelly, 1998 [S]) gastroesophageal reflux disease, and nasal polyp (Isaacson, 1996 [S]; Brook

et al., 2000 [E]; Gungor & Corey, 1997 [S]) and should be considered in the differential diagnosis.

Radiologic Assessment

1. Routine radiologic studies are not indicated in the initial management of a patient suspected of uncomplicated acute bacterial sinusitis. It is recommended that patients with suspected acute bacterial sinusitis be treated based on the clinical impression without the addition of imaging studies (Schwartz, Pitkaranta, & Winther, 2001 [C]; Diament, 1992 [E]; American College of Radiology Appropriateness Criteria [ACR], 2000 [E]; Local Expert Consensus [E]). Paranasal sinus imaging abnormalities are non-specific, often present without sinusitis, and may last longer than clinical symptoms when sinusitis is present (Maresh, 1940 [D]; Shopfner & Rossi, 1973 [C]; Odita et al., 1986 [C]; Glasier, Ascher, & Williams, 1986 [C]; Glasier, Mallory, & Steele, 1989 [C]; Diament et al., 1987 [C]; Rak et al., 1991 [C]; Gwaltney et al., 1994 [D]).
    - Note 1: Abnormalities of the paranasal sinuses are found frequently on conventional radiographs and computed tomography scans in children without clinical evidence of sinusitis (see table below) (Maresh, 1940 [D]; Shopfner & Rossi, 1973 [C]; Odita et al., 1986 [C]; Glasier, Ascher, & Williams, 1986 [C]; Glasier, Mallory, & Steele, 1989 [C]; Diament et al., 1987 [C]; Rak et al., 1991 [C]). The presence of an upper respiratory infection alone (without sinusitis), can result in mucosal thickening and abnormal findings in the paranasal sinuses on plain radiographs and computed tomography scans (Shopfner & Rossi, 1973 [C]; Glasier, Ascher, & Williams, 1986 [C]; Glasier, Mallory, Steele, 1989 [C]; Gwaltney et al., 1994 [D]).
    - Note 2: Imaging findings may persist well after symptoms improve. Computed tomography abnormalities with the common cold may last up to 2 weeks after symptomatic improvement (Gwaltney et al., 1994 [D]). Magnetic resonance imaging changes in patients with symptoms of acute sinusitis may last more than 8 weeks (Leopold, 1994 [D]).
    - Note 3: "Limited" sinus computed tomography lacks sensitivity in identifying air-fluid levels (Gross et al., 1991 [C]), suboptimally visualizes the osteomeatal complex 30% of the time and misses 20-30% of the findings found on full computed tomography (Wippold et al., 1995 [C]).

    Table. Abnormal Imaging in Children with Upper Respiratory Symptoms

Age Range	Imaging Mechanism	% Abnormal
*6 months-15 years	Plain films	15-57%
**Infants and children	Computed tomography scan	18-67%

***15-85 years	Magnetic resonance imaging	80%

* (Maresh, 1940 [D]; Odita et al., 1986 [C]; Diament et al., 1987 [C]; Shopfner & Rossi, 1973 [C]; **Glasier, Ascher, & Williams, 1986 [C]; Glasier, Mallory, & Steele, 1989 [C]; ***Rak et al., 1991 [C])

2. Imaging may be considered appropriate under the following circumstances: (Local Expert Consensus [E]) (see table below for radiologic modalities)
    - In children with acute sinusitis and suspected subperiosteal or orbital abscess. An Otolaryngology (or Ophthalmology if orbital process is present) consultation prior to obtaining radiologic studies in this patient population may reduce the need for an early study and limit repeat radiation exposure (Local Expert Consensus [E]).
    - In children with acute sinusitis and suspected intracranial complications (Local Expert Consensus [E]).
    - In the older child, a clear or normal Water's view may be helpful in ruling out significant maxillary sinus disease taking into consideration clinical findings after unsuccessful therapy (Local Expert Consensus [E]; Lau et al., 1999 [S]; Wald, 1988 [E]).

    Table. Radiologic Modalities for Suspected Complications of Acute Sinusitis

Indications	Modalities
Suspected subperiosteal or orbital abscess	Contrast enhanced computed tomography scan or orbits (thin section)
Suspected intracranial complications	Contrast enhanced computed tomography or magnetic resonance imaging of brain

(Local Expert Consensus [E]; ACR, 2000 [E])

Laboratory Assessment

1. Routine laboratory testing such as complete blood count or nasopharyngeal culture is not recommended in the initial evaluation in children with uncomplicated sinusitis (Clement et al., 1998 [E]).
    - Note: Organisms recovered from nasopharyngeal washings and throat culture do not reflect the organisms found in sinus aspirate (Wald et al., 1981 [B]).
2. Although sinus aspiration and bacterial culture are recognized as the "gold standard" for definitive diagnosis of bacterial sinusitis they are not recommended for use in the initial evaluation and management of the child

with uncomplicated acute bacterial sinusitis. Sinus aspiration and culture may need to be considered under the following situations: (Wald et al., 1981 [B])

- Severe illness or toxic looking child
- Immunocompromised child
- Presence of suppurative or intracranial complications

Antibiotic Treatment

The diagnosis and treatment of acute pediatric sinusitis is best considered in light of the duration and severity of symptoms and the increasing prevalence of resistant strains of a common sinus pathogen, Streptococcus pneumoniae. The treatment algorithm for this guideline was developed with a focus on antimicrobial activity against Streptococcus pneumoniae in an era of increasing penicillin resistance. Clinicians should consider use of the most narrow-spectrum agent that is active against the likely pathogens for the initial antimicrobial treatment of acute bacterial sinusitis in children (Dowell, Schwartz, & Williams, 1998 [E]). Risk factors to consider for penicillin-resistant Streptococcus pneumoniae include (1) daycare attendance (2) recent receipt of antimicrobial therapy (<30 days) (3) age <2 years and (4) exposure to environmental tobacco smoke (ETS) (Block et al., 1995 [C], Levine et al., 1999 [C]; Jacobs et al., 1999 [D]; Brook & Gober, 1999 [D]; Dowell et al., 1999 [E]).

1. In the child with no risk factors for penicillin-resistant Streptococcus pneumoniae standard dose amoxicillin or Augmentin (with standard dose Amoxicillin component) may be considered as initial therapy (Wald et al., 1981 [B]; Wald et al., 1984 [B]; Wald, Chiponis, & Ledesma-Medina, 1986 [B]). (See Table 5 titled "Considerations When Selecting Antibiotic Therapy for Acute Bacterial Sinusitis" in the original guideline document for dosages and other considerations when selecting antibiotic therapy.) It should be recognized however, that the rates of Streptococcus pneumoniae resistance to penicillin are increasing nationally and locally (Butler et al., 1996 [C]; Breiman et al., 1994 [C]).
    - Note: Forty-six percent of isolates at Children's Hospital Medical Center of Cincinnati, Ohio have intermediate or high Penicillin-resistant Streptococcus pneumoniae and local data supports that 15% of children locally may fail initial therapy with standard dose amoxicillin.
2. In children with risk factors for Streptococcus pneumoniae, it is recommended that Amoxicillin, high dose (80 to 90 mg/kg/day) or Augmentin (with high dose amoxicillin component) be utilized as first-line therapy (Nash & Wald, 2001 [S]; Wald, Chiponis, & Ledesma-Medina, 1986 [B]; Nelson, Mason, & Kaplan, 1994 [C]; Dowell et al., 1999 [E]; Dowell, 1-1998 [E]; Friedland & McCracken, 1994 [E]; Local Expert Consensus [E]).
    - Note: Failure with amoxicillin is likely to be due to resistant Streptococcus pneumoniae, Haemophilus influenzae, or Moraxella catarrhalis. High dose amoxicillin will overcome Streptococcus pneumoniae resistance (changes in penicillin-binding proteins) (Dowell et al., 1999 [E]; Whitney et al., 2000 [D]). The clavulanic acid component of Augmentin is active against resistant Haemophilus influenzae and Moraxella catarrhalis (B-lactamase enzyme) (Wald, Chiponis, & Ledesma-Medina, 1986 [B]; Dagan et al., 2000 [A]).
3. Augmentin with high dose amoxicillin (if not used as initial therapy), cefuroxime, cefpodoxime, cefprozil, and cefdinir are reasonable considerations

as second-line agents in pediatric acute bacterial sinusitis (Sinus and Allergy Health Partnership, 2000 [E]; Dowell et al., 1999 [E]; Jacobs et al., 1999 [D]).
    - Note: Cefuroxime may be superior to other second-generation cephalosporins in children exposed to antibiotics in the past 30 days (Pichichero et al., 1997 [C]; Marchant et al., 1992 [A]; Jacobs et al., 1999 [D]; Dowell et al., 1999 [E]).
4. Once therapeutic response has been demonstrated, it is recommended that the selected therapeutic agent be continued for a minimum of 10 to 14 days in order to minimize the development of bacterial resistance (Local Expert Consensus [E]; Morris, 2000 [M]).
5. If no improvement occurs or if there is worsening of symptoms after 72 hours of therapy with a first or second-line agent, a second or third-line agent may be considered respectively (Wald, Chiponis, & Ledesma-Medina, 1986 [B]; Dowell et al., 1999 [E]).
6. If clinical failure with a second-line agent occurs, third-line agents for pediatric acute bacterial sinusitis are clindamycin and cefixime, with activity against resistant Streptococcus pneumoniae and gram negative organisms, respectively (Block et al., 1995 [C]; Dowell et al., 1999 [E]; Sinus and Allergy Health Partnership, 2000 [E]).
7. In the penicillin-allergic patient, second or third-line agents, in addition to the macrolides (erythromycin, clarithromycin), and newer azilides (azithromycin) or trimethoprim-sulfamethoxazole may be considered (Local Expert Consensus [E]).
    - Note: Macrolides, azilides, and sulfa containing agents are not recommended as standard therapeutic agents due to either a lack of efficacy data, increasing resistant Streptococcus pneumoniae or both (Dagan et al., 2000 [A]; Nelson, Mason, & Kaplan, 1994 [D]; Gay et al., 2000 [D]).
8. In select groups of patients with persistent or recalcitrant sinusitis it may be reasonable to consider an otolaryngology consultation after antibiotic therapy of at least 6 weeks duration or 3 separate courses are unsuccessful (Local Expert Consensus [E]).
    - Note: It is preferable to consult with an otolaryngology specialist prior to obtaining imaging in children with suspected sinusitis (Local Expert Consensus [E]).
9. Toxic appearing children who demonstrate poor tolerance of oral intake may require initial parenteral therapy either as an outpatient or short inpatient stay. Reassessment of such patients after initial stabilization may avoid unnecessary imaging and referral early in the course of therapy.

Consultation for Complications of Acute Bacterial Sinusitis

Although children with the complications discussed below (see also Table 4 titled "Complications of Sinusitis" in original guideline document) are listed as exclusions to this guideline, several recommendations are included here to assist the practitioner in decisions regarding consultation to specialists for these key complications.

1. It is recommended that otolaryngology and/or ophthalmology consultation be sought for signs of impending suppurative complications of acute sinusitis (Local Expert Consensus [E]). Such complications are rare but very serious

and often result from orbital or intracranial spread of infection (Rosenfeld & Rowley, 1994 [D]).

- Note 1: Preseptal cellulitis, involving only tissue anterior to the orbital septum, manifests as lid edema/erythema, conjunctivitis, and fever. It may be treated with oral antibiotics and close follow-up except where toxicity or specific symptoms preclude adequate antimicrobial effectiveness by mouth.
- Note 2: In cases of orbital spread, as listed above, an otolaryngology/ophthalmology consultation is recommended. Consultation should be considered prior to imaging, so as to limit repeat radiation exposure (Local Expert Consensus [E]).

2. It is recommended that otolaryngology consultation be considered in cases of a moderately to severely ill child with suspected acute frontal or sphenoid sinusitis due to the potential for intracranial spread. Infection arising in either site will generally occur in a relatively older age group (>6 years), and based on the developmental anatomy of these sinuses, the clinical presentation is likely to be more severe (Wolf, Anderhuber, & Kuhn, 1993 [F]).
    - Note 1: Acute frontal sinusitis manifests as an intense frontal headache with tenderness over the sinus itself. Spread of infection anteriorly produces periosteal edema and osteomyelitis and may manifest as doughiness of the forehead skin, known as Pott puffy tumor. Spread of infection to the cranial vault results in meningitis or intracranial abscess.
    - Note 2: Acute isolated sphenoid sinusitis is rare, with an estimated incidence of <1% of all sinusitis cases. (Hnatuk, Macdonald, & Papsin, 1994 [S]; Fearon, Edmonds, & Bird, 1979 [S]; Wyllie, Kern, & Djalilian, 1973 [S]). Acute sphenoid sinusitis represents an elusive diagnosis, (Postma, Chole, & Nemzek, 1995 [S]; Sellars, Goldberg, & Seid, 1975 [S]; Myer et al., 1982 [S]) as signs and symptoms are more variable and non-specific than those of frontal sinus disease. Nasal symptoms may be absent. Headache is severe, deep-seated and worse at night, with the pain radiating to any craniofacial region (Sellars, Goldberg, & Seid, 1975 [S]; Myer et al., 1982 [S]). Suppurative complications may involve any of the vital juxtaposing structures, including the cavernous sinus, intracranial cavity, orbit, pituitary gland and abducens nerve.

Symptomatic Treatment

1. Given the lack of evidence for effectiveness of common agents used for symptomatic treatment of cough or congestion (i.e. reduction in frequency or severity), use of such treatments are not recommended in the routine management of patients with acute sinusitis (Hutton et al., 1991 [B]; Taylor et al., 1993 [B]; McCormick et al., 1996 [B]; Clemens et al., 1997 [B]; Chang et al., 1998 [B]; Bernard et al., 1999 [B]; Davies et al., 1999 [B]; Gadomski & Horton, 1992 [O]).
    - Note 1: Studies measuring a decrease in frequency, severity, and time to resolution of cough or congestion in children with symptoms from upper respiratory infection found no significant difference between any of the therapeutic interventions and placebo. The therapies evaluated were inhaled steroids, inhaled and oral beta-2 agonists, anti-histamines/decongestants (brompheniramine,

phenylephrine, phenylpropanolamine, dextromethorphan/guaifenesin, oxymetolazine or "afrin"), and morphine derivatives (codeine) (Hutton et al., 1991 [B]; Taylor et al., 1993 [B]; McCormick et al., 1996 [B]; Clemens et al., 1997 [B]; Chang et al., 1998 [B]; Bernard et al., 1999 [B]; Davies et al., 1999 [B]; Gadomski & Horton, 1992 [O]).

- Note 2: Given the recent association of one previously common ingredient (phenylpropanolamine) with stroke and that most anti-histamine, decongestants, and antitussives have not been U.S. Food and Drug Administration (FDA) approved in children, their use is discouraged (American Academy of Pediatrics [AAP], 1997 [S]; Kernan et al., 2000 [D]).
- Note 3: Although hypertonic and normal saline and balanced physiological saline nasal washes are commonly used in postoperative patients and in children with chronic sinusitis (Pigret & Jankowski, 1994 [B]; Shoseyov et al, 1998 [B]; Nuutinen et al., 1986 [C]), there is no evidence for their effectiveness in pediatric acute sinusitis.

Parental Expectations

1. It is recommended that physicians explore parental expectations concerning the office visit for a child with an upper respiratory infection. Antibiotic prescription for upper respiratory infections may often be provided because physicians believe parents expect it (MacFarlane et al., 1997 [C]; Barden et al., 1998 [C]; Mangione-Smith et al., 1999 [C]).
    - Note 1: Factors that influence the decision to provide an antibiotic prescription include parental expectations, parental assumptions that infections equate to antibiotic need, parental lack of knowledge regarding bacteria and viruses, the role of antibiotics, and pressure from day care centers and employers (MacFarlane et al., 1997 [C]; Barden et al., 1998 [C]; Mangione-Smith et al., 1999 [C]).
    - Note 2: Receipt of an antibiotic prescription is not related to satisfaction with care. Satisfaction is related to responsiveness of the physician to the parents' concerns (Mangione-Smith et al., 1999 [C]; Barden et al., 1998 [C]; Hamm, Hicks, & Bemben, 1996 [C]).
2. It is recommended that the physician, staff, or office nurse educate parents regarding the role of viruses in infections and antibiotic resistance risks, thereby minimizing need for inappropriate use of antibiotics (Trepka et al., 2001 [C]; Roberts et al., 1983 [A]; Barden et al., 1998 [C]; Braun et al., 2000 [C]; Braun & Fowles, 2000 [C]; Palmer & Bauchner, 1997 [C]).
    - Note: In two double blind, randomized, controlled trials of antibiotic compared to placebo in acute pediatric sinusitis, more than two thirds of children in the placebo arms experienced clinical improvement (Wald, Chiponis, & Ledesma-Medina, 1986 [B]; Garbutt et al., 2001 [B]).

Definitions:

Evidence Based Grading Scale:

A: Randomized controlled trial: large sample

B: Randomized controlled trial: small sample

C: Prospective trial or large case series

D: Retrospective analysis

E: Expert opinion or consensus

F: Basic laboratory research

S: Review article

M: Meta-analysis

Q: Decision analysis

L: Legal requirement

O: Other evidence

X: No evidence

CLINICAL ALGORITHM(S)

An algorithm is provided for the treatment of acute bacterial sinusitis.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate diagnosis and treatment of acute sinusitis in children

POTENTIAL HARMS

Inappropriate use of antibiotics may lead to the development of bacterial resistance

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

These recommendations result from review of literature and practices current at the time of their formulations. This protocol does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. The guideline document is not intended to impose standards of care preventing selective variances from the guidelines to meet the specific and unique requirements of individual patients. Adherence to this pathway is voluntary. The physician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

The recommendations are based on the most current and best scientific information available. The amount or depth of quality evidence for diagnosis and treatment of acute pediatric sinusitis is limited compared to the frequency of its occurrence. As the causative organisms in acute pediatric sinusitis and otitis media are identical, where evidence was minimal or non-existent, literature from pediatric otitis media studies was extrapolated for use in treatment recommendations. In the absence of quality evidence, expert opinion and group consensus were used.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Cincinnati Children's Hospital Medical Center. Evidence based clinical practice guideline for children with acute bacterial sinusitis in children 1 to 18 years of age. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2001 Apr 27. 17 p. [234 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2001

GUIDELINE DEVELOPER(S)

Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

SOURCE(S) OF FUNDING

Cincinnati Children's Hospital Medical Center

GUIDELINE COMMITTEE

Clinical Effectiveness Acute Sinusitis Team

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Acute Sinusitis Team

Community Physicians: Ann Saluke, MD (Team Leader); Stephen Bird, MD (Pediatrics); Toni Cottongim, MD (Family Practice)

Children's Hospital Medical Center Physicians: Amal Assa'ad, MD (Allergy/Immunology); Sue Poynter, MD (Chief Resident); Richard Ruddy, MD (Emergency Medicine); Anslem Oparaugo, MD (Infectious Disease); Kieran Phelan, MD (General Pediatrics); Bernadette Koch, MD (Radiology); Paul Willging, MD (Otolaryngology); Deborah Witiak, MD (Otolaryngology)

Patient Services: Sue Ralston/Dawn Butler, PharmD (Clinical Pharmacy); Donna Hilman, RN (Emergency Department)

Other Services: Barbarie Hill (Pratt Library); Mary Pat Alfaro, RD, MS (Clinical Effectiveness); Wendy Gerhardt, RN, MSN (Clinical Effectiveness); Uma Kotagal, MBBS, MSc (Dir. Clinical Effectiveness); Kate Turck, BS (Clinical Effectiveness)

Ad Hoc Advisors: Melissa Berner, ESQ (Legal Services); Alan Brody, MD (Radiology); Beverly Connelly, MD (Ped Infectious Diseases); Thomas DeWitt, MD (General/Community Peds); Michael Farrell, MD (Chief of Staff); Robert Kersten, MD (Ophthalmology); Kathy Latta, RN (Patient Services/Education); Irwin Light, MD (IRB-Chairperson); Paul Perlstein, MD (CE Consult); Dorine Seaquist, RN, MS (VP Patient Services); Constance West, MD (Ophthalmology)

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

An update is not in progress at this time.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Cincinnati Children's Hospital Medical Center.

For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Children's Hospital Medical Center Health Policy and Clinical Effectiveness Department at HPCEInfo@chmcc.org.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on March 28, 2002. The information was verified by the guideline developer on May 7, 2002.

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Date Modified: 11/8/2004